

**No. 637,565.**

**Patented Nov. 21, 1899.**

**E. HETT.**

DEVICE FOR DISTRIBUTING WATER.

(Application filed Nov. 28, 1894. Renewed July 12, 1898.)

(No Model.)

**3 Sheets—Sheet 1.**

[illegible]

Witnesses:-  
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Sidney Mann

*Inventor*  
*Edward Hett,*  
*By his Attorneys,*  
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3 Sheets—Sheet 2.

Fig. 3.



Fig. 5.

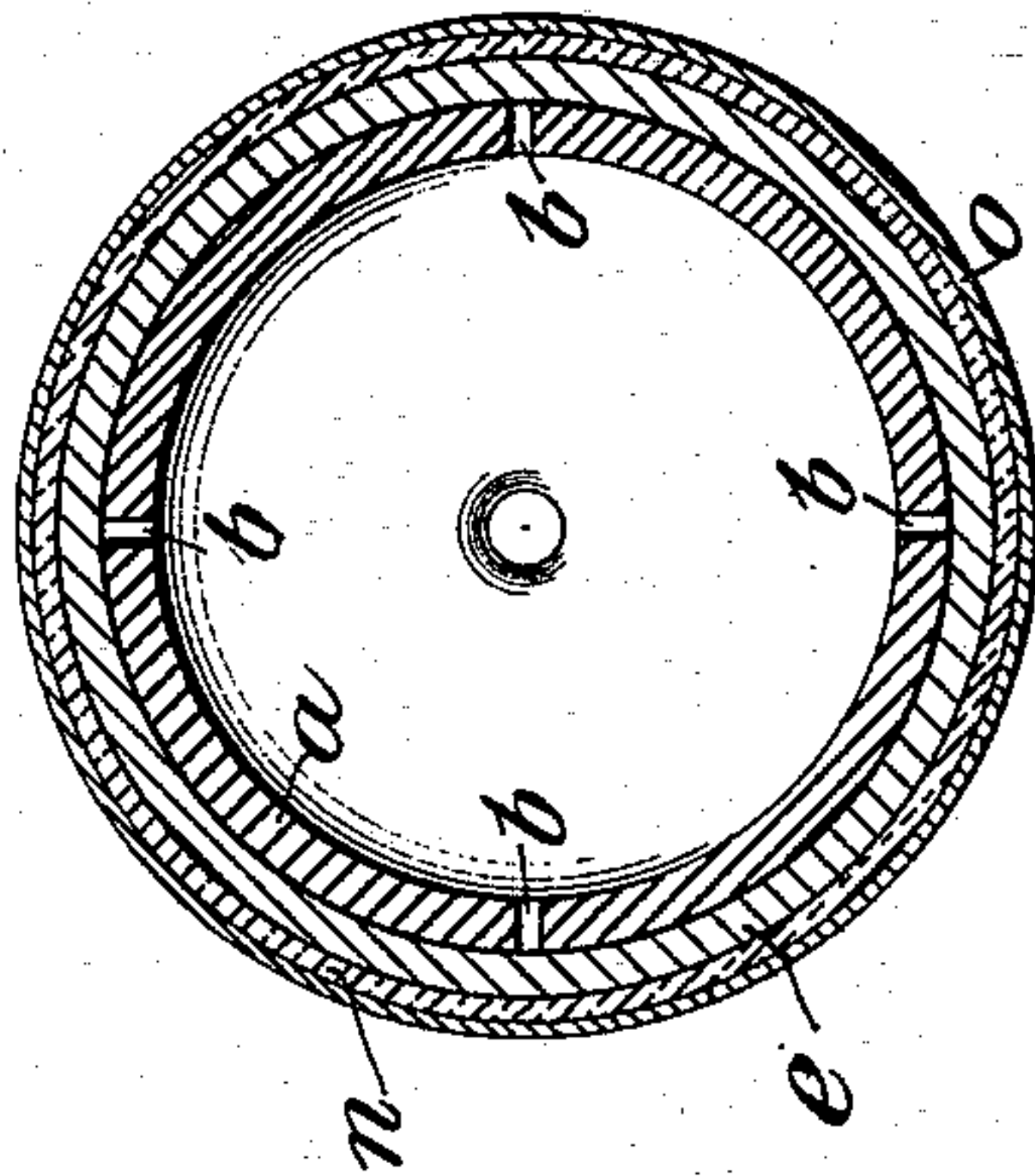
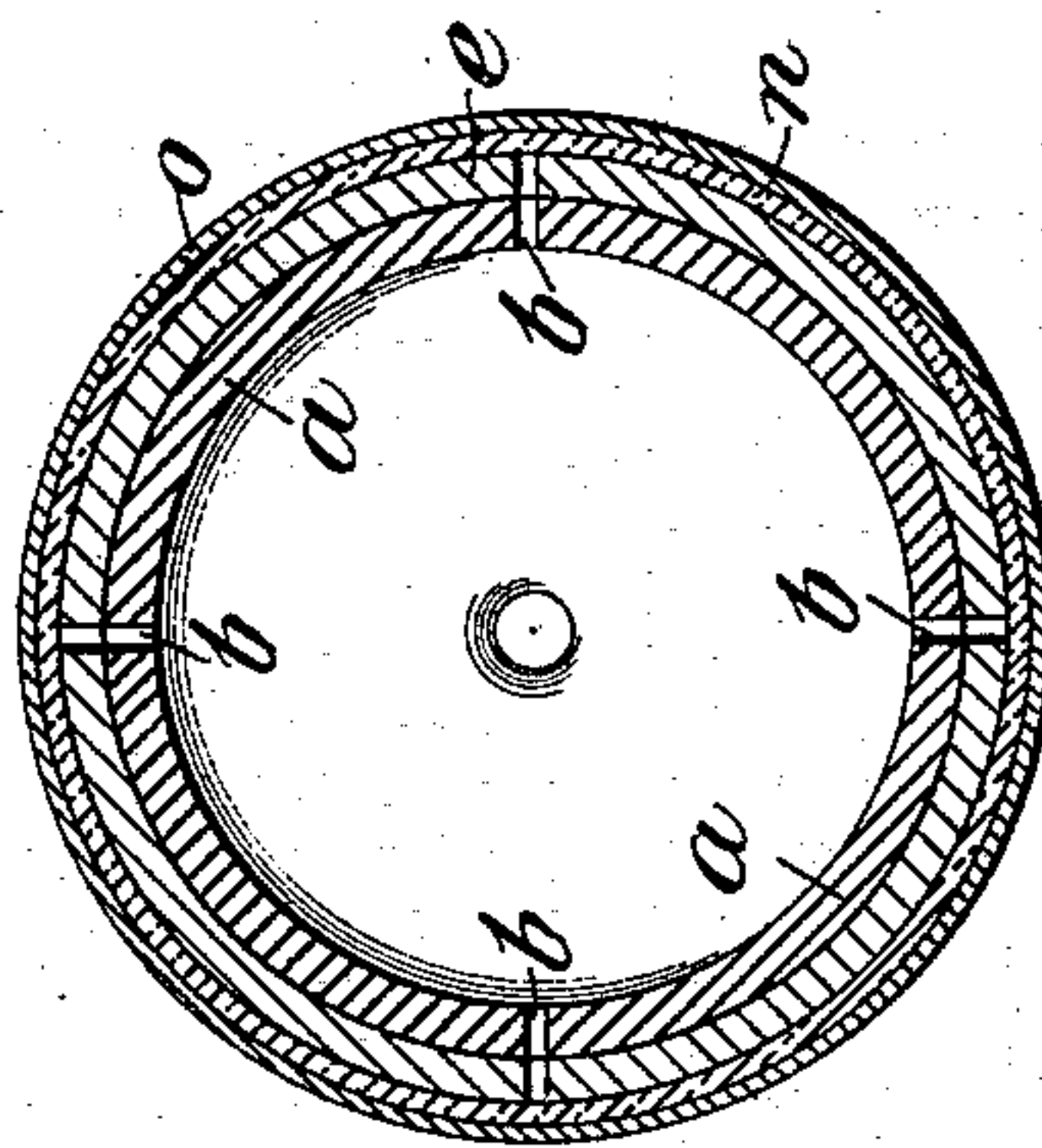


Fig. 4.



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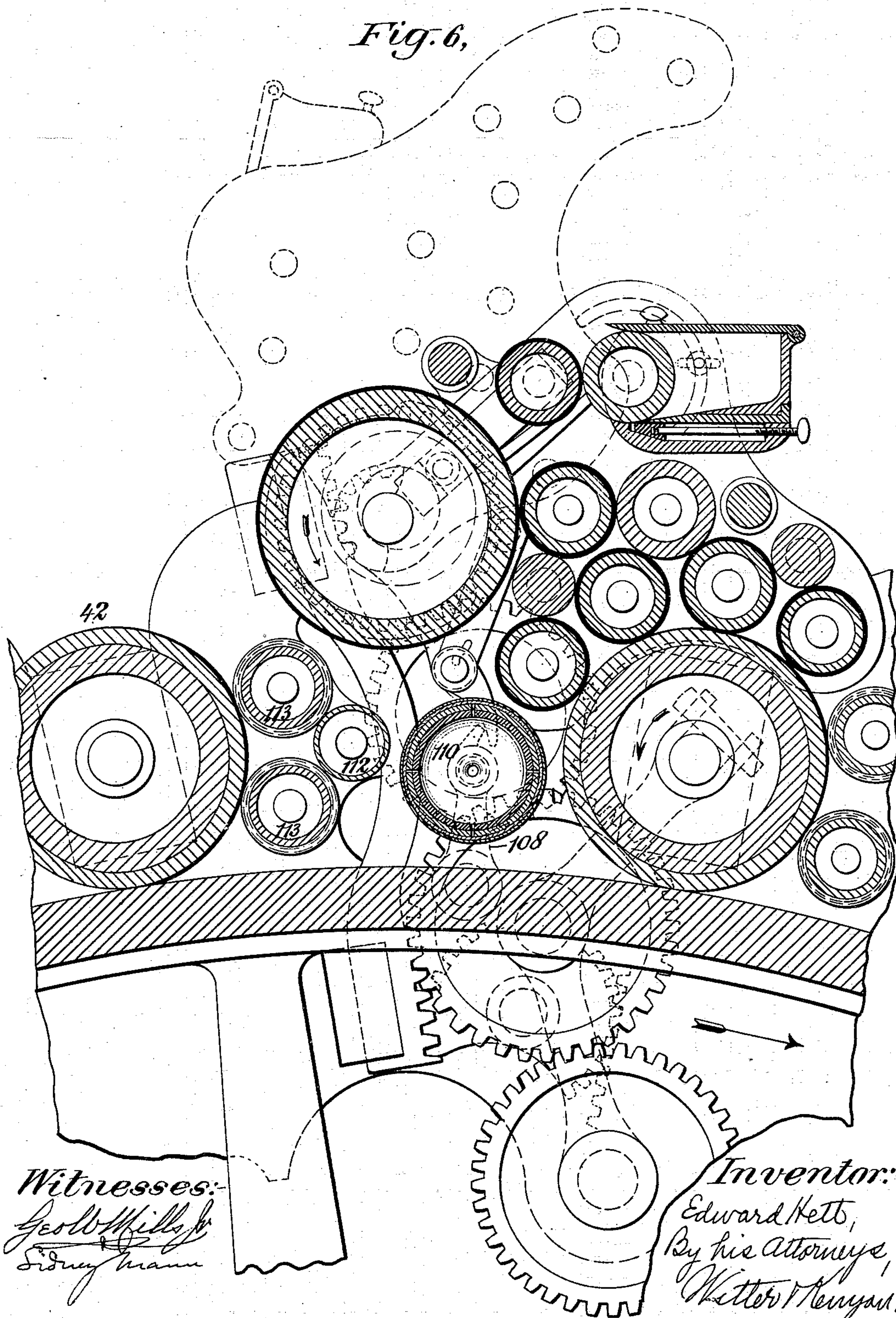
DEVICE FOR DISTRIBUTING WATER.

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3 Sheets—Sheet 3.

*Fig. 6,*



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# UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

## DEVICE FOR DISTRIBUTING WATER.

SPECIFICATION forming part of Letters Patent No. 637,565, dated November 21, 1899.

Application filed November 28, 1894. Renewed July 12, 1898. Serial No. 685,765. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD HETT, a citizen of the United States, and a resident of New York, (New Dorp,) in the county of Richmond and State of New York, have invented a new and useful Device for Distributing Water or other Liquid Especially Adapted for Use as a Water-Roller in Printing-Presses, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, which form a part hereof.

My invention relates primarily to means for supplying and distributing water to the printing or form cylinders of a printing-press for the purpose of dampening the surfaces of such cylinders where such dampening is required and especially in multicolor lithographic printing presses. It will be apparent that some of its features may be employed for supplying and distributing other liquids than water and in connection with other devices than the form-cylinders of printing-presses.

The object of my invention is to make it possible to regulate with accuracy and certainty and with great ease and by a simple operation the quantity of liquid supplied and at the same time to secure a complete and uniform distribution of the liquid over the surface of the distributing device, and thereby over the surface of the cylinder or other object to which the liquid is supplied.

Another object of my invention is to secure the utmost simplicity of construction and method of operation.

Another object of my invention is to successfully dampen continuously a series of curved lithographic-printing surfaces in a multicolor lithographic printing press that is continuously printing a plurality of colors upon the paper in approximately instantaneous succession.

My invention consists of the parts and combinations of parts herein set out and claimed.

The accompanying drawings represent the parts and indicate the combinations of parts in a multicolor lithographic printing press embodying my invention.

Figure 1 represents a side view of the water-fountain or source of supply, being a roller broken away at the middle, so as to show means for regulating the quantity of the water-supply, being the two perforated tubes and the

outer coverings, the perforations being shown in register. Fig. 2 represents a sectional view through the axis of the roller, the perforations of one tube being shown out of register with the perforations of the other. Fig. 2<sup>a</sup> represents a sectional view through the axis of the roller, half the perforations of one tube being shown in register with half the perforations of the other. Fig. 3 is a side view of the outer tube with the coverings removed and in such position as to show two lines of perforations. Fig. 4 is a cross-section taken on the line 4 4 of Fig. 2<sup>a</sup>. Fig. 5 is a cross-section taken on the line 5 5 of Fig. 2. Fig. 6 is a sectional view of an illustrative portion of a multicolor lithographic printing press forming as to some of its features the subject of my application for a patent, Serial No. 518,015, filed on July 19, 1894, and renewed May 27, 1899, Serial No. 718,570, showing my improved regulatable water-fountain combined therein and indicating the method of combination of a series of such water-supply devices in a series of dampening mechanisms with a series of lithographic-printing surfaces and a series of inking mechanisms, all arranged about the periphery of a central impression-drum.

Referring to the drawings, *a* represents a tube which is provided with perforations *b b*, arranged in groups of two and distributed uniformly over the entire body of the tube, as shown in Figs. 2 and 3. These perforations, as shown, are arranged in lines running lengthwise of the tube and also in lines encircling the tube. In this way the points of discharge for the water are placed at uniform distances from one another and evenly and regularly distributed over the surface of the tube. The distance between the two perforations of each group is preferably made equal to the diameter of each perforation. The number, size, and arrangement of these perforations can be greatly varied. I prefer to make the perforations about one-sixteenth of an inch wide.

The tube *a* is securely attached to the heads *d* and *c*, preferably by a screw-thread attachment such as shown. The heads *d* and *c* are provided with journals, as shown, by which they can be mounted in the press. The journal of head *d* has an opening through its center for the admission of water to the tube.



A similar opening may be made through the other journal, if desired.

*e* is a second or outer tube which is adapted to fit nicely over the inner tube *a* and to move thereon. This tube *e* is also perforated in the same manner as the inner tube and so that when it is brought into proper position on the inner tube the perforations of the inner tube will be in line with and exactly register with corresponding perforations in the outer tube.

As the two perforations of each group are arranged lengthwise of the tubes, the outer tube is made to move lengthwise on the inner tube. This is accomplished by the screw-threaded neck *f*, extending from one end of the tube *e*, and the ring *g*, which is provided with an internal screw-thread taking in the screw-thread of the neck *f*. The ring *g* is adapted to turn on the head *d*, but is prevented from moving lengthwise thereon by means of the annular projection or guide *h* on the head *d*, which projects into the annular groove *i* in the ring *g*. When the ring *g* is turned in one direction, it draws the tube *e* toward it. When it is turned in the reverse direction, it forces the tube *e* in the opposite direction. The ring *g* in the form shown in the drawings is made in two parts, so that it can be put in place upon the head *d*. When the tube *e* has been properly adjusted, it is held in place also by the nut *k*, which is screwed against the end of the tube *e*, thus holding the tube firmly between the ring *g* and the nut *k*. The nut *k* takes in a screw-thread on the head *c*. To prevent the tube *e* from revolving or turning on the tube *a*, the tube *e* is provided with a longitudinal slot *l*, into which a pin *m* projects from the tube *a*. The tubes *a* and *e* are preferably made of brass.

*n* is the usual covering of felt, and *o* the usual outside covering of flannel. These coverings are fastened to the outside tube by means of annular slots or grooves *p p* in the tube *e*, near its ends, into which the coverings are pressed, and thereby fastened by means of the wire or string *q*, as shown.

The operation of the specific water-supply device shown is as follows: When the full quantity of water which can be discharged through all the perforations is required, the outer tube is moved so as to bring its perforations in register with those of the inner tube. If a smaller quantity of water is desired, the outer tube can be moved so as to partly shut off each perforation, or by moving the outer tube a distance equal to twice the diameter of one of the perforations half the perforations in the outer tube will be in exact register with half the perforations in the inner tube, the other perforations being entirely closed. Better results are secured in the latter way and I prefer that mode of operation, because it is advantageous to keep the size of the discharge-openings always the same and to reduce the quantity of water discharged by reducing the number of such discharge-open-

ings. Where the construction is such that the movement of one tube upon the other operates to control the quantity of water discharged by increasing or decreasing the size of the separate perforations or openings, the results are not as reliable or as controllable. When a discharge-perforation is made too small, it may suddenly cease altogether to discharge or may discharge irregularly, and again it may not, and if increased very slightly its discharge may be disproportionately increased or it may not. Friction and capillary attraction come in to change and modify the flow or to stop it altogether and this irregularly—that is to say, not always exactly or reliably in proportion to the size of the opening. Then, again, dirt and grit and sediment in the water may clog very small openings, and if so this clogging will be very apt to be irregular. My invention permits the maintaining of the size or diameter of the separate openings or perforations, while decreasing or increasing the effective number of such perforations open to the flow of the water. In this way a reliable control of the aggregate flow is obtained and maintained. Other methods of arranging or grouping the perforations may be employed, so long as by moving the second tube into different positions upon the first a different number of perforations will be brought into register. In this way the quantity of water supplied by the water-roller can be easily and accurately and nicely regulated. By distributing the perforations uniformly over the entire surface of the roller the water is evenly and uniformly distributed and each part of the surface of the roller receives its proper share.

In Fig. 6 the improved water-roller just described is shown in combination with a curved or cylindrical lithographic-printing surface, a group of intervening water-distributing rollers, and an inking mechanism and indicates the combination of a series of groups of such parts with a central impression-drum and about the periphery of such drum in a multicolor lithographic printing press such as I have described and claimed as to other features in another application for Letters Patent, Serial No. 518,015, filed by me on July 19, 1894, and renewed May 27, 1899, Serial No. 718,570. In this figure, 11 is a central impression-drum. 42 is a curved or cylindrical lithographic-printing surface, a series of which are arranged on the periphery of the impression-drum. 63 is the ink-fountain, and 64 is a group of ink-distributing rollers, constituting an ink mechanism for one of the printing-surfaces, a series of such ink mechanisms being provided, one for each printing-surface, and arranged, as shown, on the outside of the printing-surface away from the impression-drum. 110 is the improved regulatable water-supply fountain, which is carried by the arms or links 108 and is adapted to be swung into contact with the roller 112, so as to moisten the same. The moisture is carried from the



roller 112 to the form-cylinder 42 by means of the intervening rollers 113.

The dampening mechanisms, one for each lithographic-printing surface, are arranged, as shown, in the interspaces between adjacent printing-surfaces and each includes a water-fountain and a group of water-distributing rollers and means for accurately regulating the minute quantity of water supplied from time to time by each water-fountain or source of water-supply to its group of water-distributing rollers.

The invention in some of its aspects can be employed for other purposes than to dampen the form-cylinders of a printing-press. It is adapted for use in any place where it is necessary to supply water or other liquid in minutely-regulated quantities to the surface of a roller or other device.

The invention, in so far as it consists in the specific form of water-fountain shown, is simple and economical and can be easily applied at any part of a machine or apparatus. No matter what position the water-roller may be put in it will not spill, as other fountains are apt to do, and will not take up much room, both of which considerations are of great importance, especially in a multicolor-printing press. The present method in practical use in lithographic work is an open bath or fountain into which a roller or a belt dips, but my improved form of water-fountain both keeps the water itself cleaner and the surrounding parts of the press cleaner and brings the water-supply under more reliable control and is more convenient in every way and more compact. It is also especially important where zinc is the lithographic-printing surface employed.

The invention, in so far as it consists of the combination of a series of printing and inking and dampening mechanisms with a central drum in a multicolor lithographic printing press, is irrespective of the specific form of the water-fountain, or of the means for accurately regulating the minute quantity of water supplied from time to time by each water-fountain to its group of water-distributing rollers.

What I claim as new, and desire to secure by Letters Patent, is—

1. A device for supplying water or other liquid in graduated quantities which consists of a common way or duct including a tube provided with perforations arranged in groups of two or more and having an inlet-opening, and a second tube correspondingly perforated with groups of two or more perforations, and adapted to move on the first tube in the direction of the line of perforations in each group, whereby the number of perforations which register in the two tubes may be varied and the quantity of liquid supplied may be thereby graduated, substantially as set forth.

2. A water-roller for a printing-press, which consists of a tube provided with heads and

journals to adapt it to be mounted in the press, and suitably perforated so as to discharge and distribute the water, an inlet-opening through one of the journals, a second tube also perforated and adapted to move on the first, a ring arranged to turn on one of the heads of the inner tube without moving longitudinally thereon and engaging with one end of the outer tube by a screw-thread connection, and a screw-threaded nut adapted to be screwed against the other end of the outer tube, whereby the perforations of the outer tube may be brought partly or wholly in or out of register with the perforations of the inner tube, and such perforations thereby opened or closed, and the tubes locked in such position, substantially as set forth.

3. A water-roller for a printing-press, which consists of a tube provided with heads and journals to adapt it to be mounted in the press, and suitably perforated so as to discharge and distribute the water, an inlet-opening through one of the journals, a second tube also perforated and adapted to move on the first, a ring arranged to turn on one of the heads of the inner tube without moving longitudinally thereon, and engaging with one end of the outer tube by a screw-thread connection, a screw-threaded nut adapted to be screwed against the other end of the outer tube and a pin-and-slot connection between the two tubes, substantially as set forth.

4. A dampening device for a printing-press, which consists of a common water way or duct including a tube provided with heads and journals to adapt it to be mounted in the press, and provided with small perforations arranged in groups of two or more to discharge and distribute the water, and having an inlet-opening through one of the journals, and a second tube correspondingly perforated with groups of two or more small perforations and means for moving the second tube on the first, the perforations of the two tubes being so arranged that by moving the second tube into different positions upon the first, a different number of perforations will be brought into register and thereby opened, whereby the quantity of liquid supplied may be graduated, substantially as set forth.

5. A water-roller for a printing-press, which consists of a tube provided with heads and journals and adapted to be mounted in the press and provided with perforations arranged in groups of two or more so as to discharge and distribute the liquid, an inlet-opening through one of the journals, a second tube correspondingly perforated with groups of perforations and adapted to move on the first tube in the direction of the line of perforations in each group, a ring arranged to turn on one of the heads of the inner tube and engaging with one end of the outer tube by a screw-thread connection, a screw-threaded nut adapted to be screwed against the other end of the outer tube, and a pin-and-slot con-



nection between the two tubes for controlling the direction of motion of the second tube on the first, substantially as set forth.

6. A fountain or water-roller for a printing-press, which consists of a tube provided with heads and journals and adapted to be mounted in the press and provided with perforations arranged in groups of two or more so as to discharge and distribute the liquid, an inlet-opening through one of the journals, a second tube correspondingly perforated with groups of perforations and adapted to move on the first tube in the direction of the line of perforations in each group, a ring arranged to turn on one of the heads of the inner tube and engaging with one end of the outer tube by a screw-thread connection, a screw-threaded nut adapted to be screwed against the other end of the outer tube, a pin-and-slot connection between the two tubes for controlling the direction of motion of the second tube on the first, a suitable covering on the outer tube, slots at the ends of the outer tube and means for pressing said covering into the slots and thus fastening the covering to the tube, substantially as set forth.

7. In combination with the printing-surface of a lithographic-printing press, and the inking mechanism, a dampening device which consists of a common water duct or way including a tube provided with suitable heads and suitably mounted in the press, and provided with small perforations to discharge and distribute the water, and having an inlet-opening in said tube, and a second tube suitably provided with small perforations and means for moving the second tube on the first, the perforations of the two tubes being so arranged that by moving the second tube into different positions upon the first, a different number of perforations will be brought into register and thereby opened, whereby the quantity of water supplied may be regulated, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD HETT.

Witnesses:

C. ASHER MAYER,

EDWARD K. STURTEVANT.